

SØRAV MUSIC ACADEMY

LEVEL 1 · FOUNDATIONS

Theory Guide & Logic Pro Practice Manual

Eight beginner lessons designed for 15–20 minutes each, followed by practical work in Logic Pro. Read, listen, test one variable at a time, and record what you notice.

Learning approach

This guide builds the vocabulary needed for later mixing, mastering, music theory, recording and production courses. It is educational material, not a substitute for listening critically or checking the requirements of a specific project.

How to use each lesson

1. Read the concept sections. 2. Perform the Logic Pro exercise in a separate practice project. 3. Complete the worksheet. 4. Answer the quiz without looking at the answer key. 5. Explain the concept aloud in your own words.

Lesson 1: What is sound?

Estimated study time: 15–20 minutes

Learning objective: Explain sound as a changing air pressure that can be captured, represented and played back as audio.

1. The physical idea

Sound begins when something vibrates. A speaker cone, a guitar string or vocal folds disturb the surrounding air. The disturbance travels as pressure variations and reaches the ear. A microphone converts pressure variations into an electrical signal; an audio interface converts that signal into digital samples for a computer.

2. Waveform is a representation

In a DAW, a waveform is a visual representation of the signal's changing amplitude over time. It is useful for locating transients, pauses and edits, but its shape alone does not tell you whether a sound is pleasant, musical or correctly balanced. Always listen.

3. Periodic and complex sounds

A steady sine wave contains one frequency. Real instruments and voices are more complex: they may contain a fundamental and harmonics, plus noise and changing resonances. These details contribute to timbre—the quality that helps distinguish a flute from a guitar playing the same note.

4. Sound versus a track

A track is an organisational lane in your DAW; it is not the sound itself. A track may contain audio regions, MIDI regions that trigger an instrument, or automation. Keeping these concepts separate makes later signal-flow lessons easier.

Logic Pro practical

Open Logic Pro and create an empty project. Add an audio track and an instrument track. On the audio track, import a short audio file if available. On the instrument track, load a built-in instrument and draw or record a few MIDI notes. Observe that audio regions display recorded waveform data, while MIDI regions contain note instructions that an instrument turns into sound. Play both and write down the difference.

Common mistakes

- Assuming a large waveform always sounds better. Waveform size shows amplitude, not artistic quality.
- Treating MIDI as recorded sound. MIDI is performance/control data; the instrument produces the audio.
- Judging a sound from its picture without listening.

Completion task

Explain in your own words the path from a vibrating guitar string to sound coming out of your headphones. Include the microphone, audio interface, DAW and playback path.

Lesson 2: Frequency, amplitude and phase

Estimated study time: 15–20 minutes

Learning objective: Distinguish frequency, amplitude and phase, and explain how each relates to what you hear and measure.

1. Frequency and pitch

Frequency is the number of cycles per second, measured in hertz (Hz). For a simple periodic tone, frequency strongly relates to perceived pitch: a higher frequency is generally heard as a higher note. The musical pitch A4 is commonly tuned to 440 Hz, though tuning standards and performances can vary.

2. Amplitude and level

Amplitude describes the size of a signal's variation. In a comparable signal, greater amplitude generally corresponds to greater level, but perceived loudness also depends on frequency content, duration and listening conditions. Do not confuse a signal's amplitude with its frequency.

3. Phase

Phase describes a waveform's position within its cycle relative to another waveform or reference. When similar signals are combined, their phase relationship affects the result. Aligned identical signals can reinforce; opposite-polarity identical signals can cancel under ideal matched conditions. Real recordings can have frequency-dependent timing differences, so phase interactions may vary across the spectrum.

4. Practical listening

Frequency is not the same as loudness. A bass note can have low frequency but high level. Phase is not simply “good” or “bad”; the question is whether combining signals causes useful reinforcement or unwanted cancellation, and whether the result remains compatible in mono.

Logic Pro practical

Create an instrument track and play a low note, then a high note at similar velocity. Observe the tuner or spectrum analyser if available. Next, place two copies of the same short audio region on separate tracks and play them together. Reverse polarity on one channel only if you have a suitable utility plugin; compare the result carefully. Do not use polarity inversion as a generic phase-fix button.

Common mistakes

- Calling frequency “volume.” Frequency relates to cycles per second; amplitude relates to signal size.
- Assuming two waveforms that look different must sound worse. Listen in context.
- Assuming polarity inversion corrects every phase problem. It only flips polarity and cannot correct all time- or frequency-dependent differences.

Completion task

Write one sentence defining frequency, one defining amplitude and one defining phase. Then describe one real mixing situation where combining two signals may change the tone.

Lesson 3: Decibels and gain staging

Estimated study time: 15–20 minutes

Learning objective: Understand decibels, track gain, faders, clipping and a repeatable gain-staging workflow.

1. What is a decibel?

The decibel (dB) expresses a ratio on a logarithmic scale. Audio software uses several related dB references. dBFS measures digital level relative to full scale; 0 dBFS is the maximum representable sample level in a conventional fixed-point digital system. A track reading below 0 dBFS is not automatically well balanced, and a quiet track is not automatically wrong.

2. Gain is not the same as a fader decision

Gain changes signal level at a particular point in the path. A channel fader adjusts level at its place in the mixer signal path. Plugin input and output controls may change level before or after processing. The exact result depends on where the control sits in the chain.

3. Clipping and headroom

If a signal exceeds the digital system's available range, clipping can occur. Many floating-point DAW mixer stages can represent internal values above 0 dBFS, but converters, fixed-point exports and individual plugins may clip or distort. Keep sensible headroom and check the whole path rather than relying on a single meter.

4. Gain-staging method

Start with sensible source levels. Keep plugin inputs within their intended operating range. Balance tracks with faders. Check buses and the stereo output. If you lower a fader after a plugin, you may reduce output level but not undo distortion created inside that plugin; if the plugin is overloaded, lower its input or adjust its drive.

Logic Pro practical

Open a multitrack session or create several instrument tracks. Play the loudest section. Watch channel meters and the stereo output. Lower overly hot source or plugin output levels where needed, then make a static balance with the faders. Avoid chasing a specific peak number as a universal rule; aim for clean signal flow, usable headroom and a balance that sounds right.

Common mistakes

- Assuming every track must peak at the same level.
- Using the master fader to hide clipping inside an overloaded plugin.
- Believing 0 dB on a channel fader means 0 dBFS audio. Fader position and signal level are different things.

Completion task

Make a before/after note of your session's loudest section. Record any overloaded stages you found and what you changed. Explain why lowering the master fader alone might not fix distortion inside a plugin.

Lesson 4: Digital audio: sample rate and bit depth

Estimated study time: 15–20 minutes

Learning objective: Explain sample rate, bit depth, aliasing, quantisation noise and sensible project settings without treating higher numbers as automatically better.

1. Sampling

Digital audio stores measurements of an analogue signal at regular time intervals. Sample rate is the number of samples per second, measured in kHz. At 44.1 kHz, the system records 44,100 samples per second per channel; at 48 kHz, it records 48,000.

2. Nyquist idea

A sampled system can represent frequencies below half its sample rate when properly band-limited. This limit is called the Nyquist frequency. Frequencies above that limit can fold back as aliasing unless controlled by appropriate filtering and conversion design. In practice, converters use anti-aliasing filters.

3. Bit depth

Bit depth determines the number of possible amplitude values in linear PCM representation. More bits allow finer quantisation and greater theoretical dynamic range. It is not the same as sample rate: sample rate concerns time sampling, while bit depth concerns amplitude resolution.

4. Choosing settings

Use the sample rate required by the project, collaborators or delivery specification. 44.1 kHz and 48 kHz are common. 24-bit recording is a common practical choice because it provides ample dynamic range for production. Higher sample rates increase data and CPU demands and are not a substitute for good recording, arrangement or mixing.

Logic Pro practical

Create a test project and locate its sample-rate setting in the project settings. Note the rate before changing anything. If you change it, understand whether Logic is converting existing material or changing the session's operating rate. Record or import a short test, then inspect the project settings and file properties. Do not resample a valuable session merely for this exercise; use a duplicate test project.

Common mistakes

- Confusing bit depth with sample rate.
- Assuming a higher sample rate automatically sounds better in every situation.
- Changing a live project's sample rate without checking the needs of existing audio and collaborators.

Completion task

Create a duplicate test project. Record its sample rate and bit depth where applicable. Write a short note explaining why a session's delivery specification matters more than choosing the largest numbers by default.

Lesson 5: Audio signal flow

Estimated study time: 15–20 minutes

Learning objective: Trace a signal through a Logic Pro channel strip, buses, sends and output, and identify where processing occurs.

1. The path matters

Signal flow is the route a signal takes from its source to its destination. A simple path may be instrument → channel processing → channel fader → output. In a DAW, routing can become more complex through buses, sends, sidechains and hardware outputs.

2. Inserts and order

Insert effects process the signal in the order shown by the channel strip, subject to the DAW's routing architecture. EQ before compression can change what frequencies drive a compressor; EQ after compression shapes the already-compressed output. Neither order is universally correct—the purpose determines the choice.

3. Sends and buses

A send routes some signal to another destination, often an auxiliary bus with reverb or delay. A bus can combine several tracks for group processing. In a typical send reverb setup, the reverb return is set fully wet and the send amount controls how much source reaches it, avoiding accidental double-dry paths.

4. Sidechain is a control path

An external sidechain lets a processor use a separate signal as its detector/control input. For example, a kick can trigger compression on a bass track. The bass audio remains the signal being processed; the kick controls when and how strongly the compressor reacts. Routing and plugin support must be configured correctly.

Logic Pro practical

Create a software instrument track and an auxiliary bus. Add a reverb to the auxiliary channel and set its mix to fully wet. Create a send from the instrument track to that bus, then raise the send gradually. Compare this with inserting reverb directly on the instrument. Trace the signal path and label source, insert, send, aux return and stereo output.

Common mistakes

- Putting a send reverb at 100% wet on the source track instead of the return when using a parallel send setup.
- Assuming plugin order never matters.
- Calling any volume ducking effect external sidechain compression without a separate detector input.

Completion task

Draw a simple routing diagram for a vocal sent to a reverb bus. Label the dry path and the wet return. Then describe how you would route a kick to control compression on a bass track.

Lesson 6: Understanding your DAW

Estimated study time: 15–20 minutes

Learning objective: Navigate the core parts of Logic Pro and distinguish tracks, regions, channel strips, buses, plugins and project settings.

1. The DAW as a system

A digital audio workstation combines recording, editing, sequencing, routing, processing and playback. Logic Pro's main areas include the Tracks area, inspector, mixer, editors, library and project settings. You do not need to memorise every shortcut immediately; learn the signal path and where each kind of task lives.

2. Tracks and regions

A track is a lane with a track type and routing. A region is a piece of content placed on that track. Audio regions contain audio; MIDI regions contain note/control events. Moving a region changes its timeline position; editing its content changes what plays.

3. Channel strips

The channel strip controls level, pan, inserts, sends and output routing. Software instrument tracks host an instrument; audio tracks receive recorded or imported audio. Auxiliary channels commonly handle buses and effect returns. The stereo output is the final mix path, but it is not a replacement for checking individual channels.

4. Save and organise

Save projects in a known location and keep source audio, exports and backups organised. When collaborating, clarify whether audio files are copied into the project and whether third-party plugins or samples are required. A project that opens only on your computer is not yet a reliable handoff.

Logic Pro practical

Create a new empty project. Add one audio track and one software instrument track. Rename them clearly. Open the mixer, identify volume, pan, inserts, sends and output. Save the project inside a dedicated practice folder. Reopen it and confirm that the tracks and instrument settings are retained.

Common mistakes

- Confusing a track with a region.
- Saving projects in a temporary folder without checking media inclusion.
- Using vague track names such as Audio 1 and Audio 2 in a complex session.

Completion task

Create and save a small Logic Pro practice project with clearly named audio and instrument tracks. Reopen it and make a short checklist of what you would need to share it with another producer.

Lesson 7: MIDI versus audio

Estimated study time: 15–20 minutes

Learning objective: Explain the difference between MIDI performance data and audio, and choose the right workflow for editing or delivering each.

1. MIDI is instructions

MIDI can carry note-on and note-off messages, pitch, velocity, timing, controller information and other performance data. A MIDI region does not itself contain the sound of a piano or synthesizer. A compatible instrument interprets those instructions and generates audio.

2. Audio is sound data

Digital audio stores sampled waveform data. Once a performance is recorded or rendered to audio, its sound is present in the audio file. You can edit regions, trim, process and mix it, but changing a recorded note's pitch or timing may require specialised tools and can affect sound quality.

3. Flexibility versus commitment

MIDI is flexible for changing notes, instrument patches and performance details. Audio is useful for editing a captured performance, sharing a sound independent of a plugin, or reducing dependence on a particular instrument. Many production workflows use both.

4. Bounce and export

Bouncing a software instrument to audio captures the instrument's output at that time. Exporting MIDI transfers musical note/control data, not the instrument's sound. When sending a project to someone else, check whether they need MIDI, audio stems, a full project, or all of these.

Logic Pro practical

Create a software instrument track and enter a four-bar MIDI phrase. Play it through a built-in instrument. Bounce or print the phrase to an audio track using a suitable Logic workflow. Compare the MIDI region and audio region. Change one MIDI note and observe that the instrument performance changes; the already printed audio will not update unless you bounce it again.

Common mistakes

- Expecting a MIDI file to sound identical without an instrument or sound source.
- Assuming exporting audio preserves editable note events.
- Forgetting to render or include third-party instruments when delivering a session to someone without those plugins.

Completion task

Export one short MIDI phrase and one audio bounce. Name both files clearly. Write when you would send MIDI, when you would send audio, and when you would send both.

Lesson 8: Critical listening fundamentals

Estimated study time: 15–20 minutes

Learning objective: Use repeatable listening comparisons, reference tracks and level matching to make more reliable production decisions.

1. Listen with a question

Critical listening is focused listening with a specific question. Instead of asking “Does it sound good?”, ask: Is the vocal intelligible? Does the kick mask the bass? Is the reverb obscuring the words? Is the stereo image stable in mono? A precise question makes the next action clearer.

2. Compare fairly

Louder audio often seems fuller or more exciting. When comparing processing, match perceived loudness as closely as practical so level differences do not bias your judgement. Bypass controls are useful, but the processed signal should not win simply because its output is louder.

3. Use references wisely

Choose references that are relevant to the arrangement, style and intended playback context. Listen to sections at comparable playback level. A reference is a guide to balance, energy and tonal direction—not a preset to copy blindly. Different arrangements may require different choices.

4. Build a listening checklist

Check the full mix, then focus on one element at a time. Listen quietly for balance, at a normal comfortable level for tone and detail, and occasionally in mono for compatibility. Take breaks; fatigue reduces judgement. Avoid unsafe listening levels and long exposure to loud monitoring.

Logic Pro practical

Import a reference track into a separate track and route it appropriately so it does not accidentally enter your mix export. Compare similar song sections at similar loudness. Make notes about vocal level, low-end balance, brightness, depth and stereo width. Toggle your mix and reference deliberately; do not change five things at once.

Common mistakes

- Comparing a louder processed signal with a quieter bypassed signal.
- Using a reference track from a very different arrangement and treating every difference as a defect.
- Making repeated decisions while tired or monitoring too loudly.

Completion task

Compare your practice mix with one suitable reference. Write three observations and choose only one change to test. Recheck at a similar loudness and record whether the change helped.

Foundation glossary

Amplitude

Size of a signal variation; closely related to level, though not identical to perceived loudness.

Auxiliary bus

A routing destination often used to combine tracks or host shared effects.

dBFS

A digital level scale referenced to full scale; 0 dBFS is the maximum conventional digital sample level.

Frequency

Cycles per second, measured in hertz (Hz).

Gain staging

Managing levels through a signal path so each stage operates appropriately.

MIDI

Musical/control messages such as notes, velocity and timing; not the rendered sound itself.

Phase

A waveform's position in its cycle relative to a reference or another waveform.

Sample rate

The number of audio samples captured per second.

Signal flow

The route a signal follows through tracks, processing, buses and outputs.

Waveform

A visual representation of signal amplitude over time.